



# Impact Assessment of Pre and Post Disaster Management Awareness Training Programme Conducted by WASH (Women Association for Sustainability & Harmony) - NGO in Cuddalore District

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**Abstract**— This study evaluates the impact of the Disaster Management Awareness Training Programme (DMATP) conducted by the Women's Association for Sustainability and Harmony (WASH), a Cuddalore-based NGO, under the Aapda Mitra initiative of the National Disaster Management Authority. The program aimed to strengthen community resilience by equipping volunteers with skills in disaster preparedness, risk assessment, and emergency response. Using a pre- and post-training assessment framework, the study employed quantitative tools including paired T-tests and Pearson's correlation to measure changes in participants' knowledge, preparedness levels, and adaptive capacity. A sample of 30 volunteers was selected through proportionate random sampling from three training batches. Data were collected via structured interviews and analysed using percentage analysis, frequency distribution, and inferential statistics. The results showed a statistically significant improvement in post-training knowledge (mean difference: - 6.667,  $p = 0.000$ ), confirming the program's effectiveness. Participants demonstrated improved understanding of disaster risks, first aid, —evacuation planning, and community coordination. Demographic analysis indicated 56.7% of participants were female, suggesting strong gender-inclusive engagement. The majority were middle-aged (63.3%), college-educated (70%), and from medium-income households (80%). However, challenges such as limited accessibility to training content and concerns over long-term knowledge retention were identified. Correlation analysis revealed that extension agency contact ( $r = 0.177$ ) had a positive impact on training outcomes, whereas information-sharing behaviour ( $r = -0.280$ ) showed a negative correlation, indicating a need to strengthen communication channels post-training. In conclusion, the WASH-led DMATP significantly enhanced community-level disaster resilience. The study recommends sustained follow-up through mock drills, refresher training, and policy-level integration to ensure long-term impact. These findings provide valuable insights for policymakers, NGOs, and disaster management practitioners focused on community-based disaster risk reduction in vulnerable regions.



**Keywords**— Disaster Management, Community Resilience, Aapda Mitra, Awareness Training, Preparedness, Adaptive Capacity, WASH NGO, Impact Assessment, Gender Inclusion, Cuddalore.

## I. INTRODUCTION

Disaster preparedness at the community level has

emerged as a critical component of effective disaster risk reduction, especially in vulnerable regions like coastal Tamil Nadu. Recognizing the need for localized resilience-

building, the National Disaster Management Authority (NDMA) launched the Aapda Mitra programme to train community volunteers in disaster preparedness and emergency response. Implemented across all states and union territories of India, this initiative has focused on developing a structured network of first responders, particularly in high-risk districts.

In Tamil Nadu, the program has been rolled out in 16 disaster-prone districts, including Cuddalore, where frequent cyclones, floods, and coastal hazards threaten lives and livelihoods. The Women's Association for Sustainability and Harmony (WASH), a Cuddalore-based NGO established in 2000, has taken a leading role in executing the training in the region. With a mission centered on gender inclusiveness, community development, and disaster resilience, WASH has mobilized and trained local volunteers through this initiative.

The Aapda Mitra training programme covers key domains such as risk assessment, evacuation planning, first aid, rescue operations, emergency communication, and post-disaster rehabilitation. Through mock drills, simulation exercises, and capacity-building sessions, it aims to equip volunteers with essential life-saving skills and enhance their role in managing localized emergencies.

Despite the program's wide implementation, there is a notable lack of empirical studies evaluating its effectiveness. In particular, limited research exists on whether such training improves participants' disaster knowledge, preparedness levels, and adaptive capacity. This study seeks to fill that gap by analyzing the impact of the Aapda Mitra training delivered by WASH in Cuddalore district.

By employing a pre- and post-training assessment framework, this research evaluates changes in knowledge and preparedness among community volunteers. The findings offer valuable insights into the program's impact and inform strategies for improving grassroots disaster response. The study also explores demographic characteristics, communication linkages, and extension contact to understand the variables influencing training outcomes, thereby contributing to the broader discourse on community-based disaster management in India.

## II. MATERIALS AND METHODS

### Locale of the Study

The research was conducted in Kumaratchi Grama Panchayat, Kumaratchi block, in Cuddalore District, Tamil Nadu. The area was chosen based on its vulnerability due to socio-economic disadvantages, and environmental risks such as flooding and saltwater intrusion.

### Selection of District and NGO

Cuddalore District, with its extensive coastline, is prone to natural disasters like cyclones and tsunamis. The district was selected for its historical exposure to hazards and the availability of vulnerability maps under the Integrated Coastal Zone Management Plan (ICZMP). WASH NGO was selected as the sole organization offering disaster preparedness training in Cuddalore. With experience training 300 volunteers, WASH plays a critical role in building community resilience.

### Sampling and Selection of Respondents

From a total of 300 volunteers trained across three batches, 30 were selected using proportionate random sampling (10 per batch). The selection formula was:

$$n_i = (N_i / N) \times n$$

Where:

- $n_i$  = number of respondents from the  $i$ -th batch
- $N_i$  = total volunteers in the  $i$ -th batch
- $N$  = total trained volunteers (300)
- $n$  = sample size (30)

### Variables and Measurement

The two dependent variables measured were the pre-training and post-training knowledge levels.

Pre Level Questions	Score	Post Level Questions	Score
YES	1	YES	1
NO	0	NO	0

### Constraints Faced by Volunteers

Challenges reported included limited training content, financial accessibility issues, and variability in information retention. However, most volunteers acknowledged improved awareness and confidence in disaster response.

### Data Collection Method

Data were collected in December 2024 using a structured interview schedule developed and pre-tested for clarity. Interviews were conducted in-person to ensure accurate and comfortable data gathered.

### Statistical tools to be used :

The data collected were analyzed using several statistical tools to ensure accurate interpretation and robust evaluation of the training programme. Frequency analysis was employed to determine how often each response occurred within the dataset. Percentage analysis was used to express the frequency of responses as a proportion of the

total sample size, calculated using the formula:

$$(\text{Category Frequency} / \text{Total Frequency}) \times 100.$$

To assess the effectiveness of the training, a paired t-test was applied to compare the mean scores of participants' knowledge before and after the training. The formula used was:

$$t = \bar{d} / (sd / \sqrt{n}),$$

where  $\bar{d}$  = mean of differences,  $sd$  = standard deviation of differences,  $n$  = sample size.

Additionally, Pearson's correlation coefficient ( $r$ ) was used to evaluate the strength and direction of the relationship between selected independent variables (such as age, education, income, and extension contact) and the training outcomes.

$$r = [n(\sum xy) - (\sum x)(\sum y)] / \sqrt{\{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]\}}$$

These tools provided a comprehensive statistical framework to measure changes in disaster preparedness and knowledge levels among participants, and to determine the influence of demographic and behavioral factors on training effectiveness.

### III. FINDINGS AND DISCUSSION

This study evaluated the impact of the Disaster Management Awareness Training Programme (DMATP) conducted by WASH in Cuddalore district. Data collected from 30 participants through structured interviews were analyzed using frequency, percentage, paired t-test, and Pearson's correlation to address two key objectives: understanding the profile characteristics of the respondents and assessing the changes in their knowledge, preparedness, and adaptive capacity before and after the training.

In terms of profile characteristics, the study found that 56.7% of the respondents were female, highlighting strong women participation in disaster preparedness efforts. A majority (63.3%) of the participants were from the middle-age group (36–45 years), indicating active engagement from this demographic. Educationally, 70% had completed collegiate-level education, while 30% had completed higher secondary school, suggesting that well-educated individuals were more likely to participate in the program. Income analysis showed that 80% of respondents belonged to the medium-income group (₹1.3 to ₹2.5 lakh per annum), reflecting higher participation from this socioeconomic bracket. Regarding extension agency contact, 54% had occasional interaction, 18% had frequent contact, and 28% had no contact at all, indicating moderate engagement with support agencies. While 41% of

participants were not affiliated with any organization, 30% were members and 29% held leadership roles. Information sharing behavior was active among 53% of respondents, with 30% sharing sometimes and 17% never sharing information.

The pre-training assessment revealed a lower level of disaster-related knowledge and preparedness, with a mean difference of -6.667, standard deviation of 2.155, and standard error of 0.393. Post-training scores showed significant improvement, with a p-value of 0.000, confirming the training's effectiveness. A paired t-test yielded a t-value of -16.945 ( $df = 29$ ), and the confidence interval (-7.471 to -5.862) confirmed a statistically significant increase in post-training knowledge and skills.

Correlation analysis revealed that organizational participation ( $r = 0.252$ ) had the highest positive correlation with post-training outcomes, followed by gender ( $r = 0.166$ ) and education ( $r = 0.124$ ). Conversely, extension agency contact ( $r = -0.234$ ) and information sharing behavior ( $r = -0.218$ ) were negatively correlated with post-training outcomes, indicating that higher levels of these variables did not necessarily translate to improved performance. Age ( $r = 0.030$ ) and annual income ( $r = -0.005$ ) showed negligible influence. Additionally, significant inter-variable correlations were observed between education and extension contact ( $r = 0.399$ ), and between information sharing and extension contact ( $r = 0.380$ ), suggesting interaction effects between background variables.

In summary, the training program significantly enhanced participants' disaster preparedness and adaptive capacity. While education and organizational involvement positively influenced outcomes, variables like age and income were less impactful. These findings underscore the importance of structured, inclusive training programs and the need for targeted outreach to ensure broader community engagement in disaster risk reduction.

### IV. CONCLUSION

The impact assessment of the Disaster Management Awareness Training Programme (DMATP) conducted by WASH NGO demonstrates the effectiveness of structured community education in improving disaster preparedness. Pre-training evaluations revealed low baseline awareness and limited knowledge of disaster risk reduction techniques, emphasizing the vulnerability of untrained communities. Post-training results showed statistically significant improvements, with a negative mean difference of -6.667 and a p-value of 0.000, validating the program's effectiveness. Participants gained essential knowledge in emergency response, risk assessment, and

early warning systems, and reported greater confidence in disaster readiness. The training's participatory approach encouraged practical engagement, making the learning both impactful and sustainable. However, long-term resilience requires continued reinforcement through refresher training, mock drills, integration of DRR into policy and education, and regular follow-up assessments. The initiative sets a model for localized disaster preparedness, proving that empowering communities through targeted training can lead to measurable and meaningful improvements in resilience and safety.

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